

REMARKS

The Examiner has rejected claims 1-10 under 35 U.S.C. §112, second paragraph as indefinite. Applicants' remarks are preceded by the Examiner's comments in small, bold face type.

Claims 1-10 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The method of claim 1 doesn't provide for any steps but simply states a general rule. A step, for example, may detail how a transducer is "reused". To say a transducer is reused does not in itself define any method since no description of how it is used in the first place is clearly provided. Additionally claims 1 and 2 note "an elastic portion of energy" which description provides for something which is defined in units (the energy) to be provided with a structural body. This description is indefinite as the body is described as energy itself.

Applicants have amended claim 1 to address the Examiner's concerns regarding the use of the word "reusing". Furthermore, as described in the specification, e.g., at pages 7-10, transducers act, e.g., to store, convert, and transfer mechanical and electrical energy. Accordingly, referring to energy in a transducer is not indefinite.

Claim 2 is additionally, quite broad. The only structure claimed is a transducer pair coupled together. While claim 3 adds a coupling member which is regarded as the shim (120) as shown in Figure 7A, claim 4 further notes that each transducer "defines a coupler" which is confusing language since it indicates a true coupling component beyond the shim. In the disclosure, while it can be argued that perhaps some sort of coupling occurs between the end of the shim and the wave plate surface (92), no specific additional coupler exists. In claim 5, the member does not define a second wave surface. For example, in figure 4A there is only one waved surface (92).

The Examiner is respectfully referred to, e.g., Figs. 17a-21 and Figs. 24-28, and the accompanying description. The "member coupling the transducers" of claim 3 is, e.g., the wave plate 330 or the wave plate 513; the "coupler" of claim 4 is, e.g., bearings 434 or bearings 521; and the "second waved surface" of claim 5 is, e.g., lower surface 391a or one of the sidewalls of sinusoidal wave pattern 514.

Regarding claim 6, if there are two transducer components, one on each side of a shim, and if the shim is deflected by the wave surface as one is moved relative to the other, how can the transducers move out of phase to each other? They move

simultaneously. Their output signals may be out of phase depending on their polarities, but it does not appear that they are capable of moving physically out of phase with each other.

With respect to claim 6, the Examiner is again referred to, e.g., Figs. 17a-21 and Figs. 24-28 and the accompanying description. The "couplers" of claim 6 are, e.g. bearings 434 (which are mounted on coupling mounts 430) or bearings 521 (which are attached to blade assemblies 515). As described at page 12, lines 12-14 of the specification, "the two coupling mounts 430 within each pair are in phase and the different pairs are *120 degrees out of phase*" (emphasis added). Therefore, the bearings 434 are positioned out-of-phase relative to each other as recited by claim 6. As described at page 14, lines 10-11 of the specification, "the four bearings 521 and the eleven sine waves in pattern 514 *define four phases* between pattern 514 and the blade assemblies 515. The four blade assemblies move with *90 degrees of phase between them*, to produce the desired redistribution of mechanical energy in the system" (emphasis added). Therefore, the bearings 521 are positioned out-of-phase relative to each other as recited by claim 6.

In claim 9, the plate is noted as being between members, yet the member is only noted as being a waved surface, so the claimed structure in this instance is indefinite. Figure 20A shows two waved surfaces, but as best as can be determined, those waved surfaces (391a, 391b) do not have a transducer located between them.

With respect to claim 9, the Examiner is respectfully referred to, e.g., Figs. 22a and 22b and the accompanying description. Claim 9 depends from claims 2 and 8. Claim 2 states "An apparatus for extracting electrical energy from mechanical motion, comprising at least two transducers coupled such that an elastic portion of energy in one transducer is transferable to the other transducer," and claim 8 states "The apparatus of claim 2 wherein the transducers are bound to a plate." The "transducers" are, e.g., the segments of piezoelectric disk 452 bonded to circular plate 454. As shown in Fig. 22a, the circular plate 454 is located between members 458a and 458b, and the plate 454 is deformed under pressure from ball bearings or rollers 456a and 456b. Therefore, plate 454 is positioned between the members 458a and 458b such that the plate 454 is deformed, as recited by claim 9.

Applicant : Kamyar Ghandi, Nesbitt W. Hagood, IV
and Aaron A. Bent
Serial No. : 09/986,205
Filed : October 19, 2001
Page : 4

Attorney's Docket No.: 10722-007001

Applicant asks that all claims be allowed. Enclosed is a check for the Petition for Extension of Time fee. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: December 6, 2002

Phyllis K. Kristal
Phyllis K. Kristal
Reg. No. 38,524

Fish & Richardson P.C.
1425 K Street, N.W.
11th Floor
Washington, DC 20005-3500
Telephone: (202) 783-5070
Facsimile: (202) 783-2331

Applicant : Kamyar Ghandi, Nesbitt W. Hagood, IV
and Aaron A. Bent
Serial No. : 09/986,205
Filed : October 19, 2001
Page : 5

Attorney's Docket No.: 10722-007001

Version with markings to show changes made

In the claims:

Claim 1 has been amended as follows:

1. A method of extracting electrical energy from mechanical motion,
comprising:

[reusing an elastic portion of energy in a transducer by] transferring [the]an elastic
portion of energy in a transducer from the transducer to another transducer.